ABSTRACT OF THE DISCLOSURE

More precise correction of global and local
distortions of microarray data and correction of
measurement errors caused by a difference in sensitivity
between fluorescent dyes. A data standardization unit for
a first process inputs gene expression intensity data from
an input device, standardizes the gene expression intensity
data by using grid-by-grid order statistics on the
assumption that most genes are in a non-expression state,
and outputs the standardized gene expression intensity data.
A spot-position-based correction unit for a second process
estimates a distortion depending on a spot position on a
grid by grid basis by a nonparametric smoothing method and
outputs gene expression intensity data whose distortion
depending on the spot position has been corrected. An S-D-
plot-based correction unit for a third process performs an
S-D transformation, estimates a distortion caused by a
difference in sensitivity between the fluorescent dyes by
the nonparametric smoothing method, and outputs the gene
expression intensity data whose distortion caused by the
difference in sensitivity between the fluorescent dyes has
been corrected to the output device.